Medical Control Guideline: DRUG REFERENCE – EPINEPHRINE **Ref. No. 1317.17**

Classification

Sympathomimetic

Prehospital Indications

Anaphylaxis
Cardiac Arrest – Non-Traumatic: cardiac arrest resuscitation, hypotension after return of spontaneous circulation (ROSC) not responsive to IV fluid resuscitation
Cardiac Dysrhythmia: symptomatic bradycardia not responsive to atropine and transcutaneous pacing for adults; and for symptomatic bradycardia unresponsive to oxygenation and ventilation for pediatric patients
Respiratory Distress / Bronchospasm: asthma, reactive bronchospasm (unlikely to benefit in COPD)
Airway Obstruction: stridor or visible airway swelling, croup/tracheitis in pediatrics
Shock / Hypotension: non-traumatic hypotension not responsive to IV fluid resuscitation

Adult Dose

Anaphylaxis
0.5mg (1mg/mL) IM in the lateral thigh, may repeat every 10 min x2 prn, maximum total 3 doses
Cardiac Arrest
1mg (0.1mg/mL) 10mL IV/IO may repeat every 5 min x2, maximum total dose 3mg
Non-traumatic shock (including from symptomatic bradycardia or after ROSC)
Push-dose epinephrine – mix 9mL normal saline with 1mL epinephrine 0.1mg/mL (IV formulation) in a 10mL syringe. Administer push-dose epinephrine 1mL IV/IO every 1-5 min as needed to maintain SBP >90mmHg
Respiratory Distress/Bronchospasm
0.5mg (1mg/mL) IM in the lateral thigh
Airway Obstruction - Stridor
Epinephrine (1mg/mL solution) administer 5mg (5mL) via neb, repeat x1 in 10 min prn
Airway Obstruction – Airway swelling
Epinephrine (1mg/mL) administer 0.5mg (0.5mL) IM, repeat every 10 min prn x2, maximum total 3 doses

Pediatric Dose

Anaphylaxis
0.01mg/kg (1mg/mL) IM, dose per *MCG 1309*, in the lateral thigh, may repeat every 10 min x2 prn for persistent symptoms, maximum total 3 doses
Cardiac Arrest
0.01mg/kg (0.1mg/mL) IV/IO, dose per *MCG 1309*, may repeat every 5 min, maximum single dose 1mg, and maximum total dose 3mg
Cardiac Dysrhythmia - Symptomatic bradycardia
0.01mg/kg (0.1mg/mL) slow IV/IO push, dose per *MCG 1309*
Shock / Hypotension (including hypotension after ROSC)
Push-dose epinephrine – mix 9mL normal saline with 1mL epinephrine (0.1mg/mL) IV formulation in a 10mL syringe. Administer push-dose epinephrine (0.01mg/mL), dose per *MCG 1309* every 1-5 min as needed to maintain SBP >70mmHg
Respiratory Distress/Bronchospasm
Epinephrine (1mg/mL) 0.01mg/kg IM in the lateral thigh, dose per *MCG 1309*
Airway obstruction – Stridor from croup/tracheitis
<1 year old: **Epinephrine (1mg/mL) 2.5mL via neb**, dose per *MCG 1309*
≥ 1 year of age: **Epinephrine (1mg/mL) 5mL via neb,** dose per *MCG 1309*
Repeat x1 in 10 min prn, maximum 2 total doses prior to Base contact
Airway obstruction - Airway swelling
Epinephrine (1mg/mL) 0.01mg/kg IM dose per *MCG 1309,* repeat every 10 min prn x2, maximum 3 total doses prior to Base contact

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Mechanism of Action

A naturally occurring catecholamine. Acts directly on alpha and beta adrenergic receptors. It is the most potent activator of alpha receptors vasoconstricting the aorta and peripheral vasculature. Beta 1 stimulation increases inotropy, chronotropy, and AV conduction. Beta 2 stimulation causes bronchial smooth muscle relaxation and vasodilation to internal organs and skeletal muscles.

Pharmacokinetics

Onset is < 2 min IV, 1-3 min IM; duration is 5-10 min IV, 20-30 min IM

Contraindications

None

Interactions

Can be partially deactivated by highly alkaline solutions, such as sodium bicarbonate.

Adverse Effects

Anxiety
CVA or MI (rare, IV only)
Hypertension
Palpitations
Tachydysrhythmias
Tremors

Prehospital Considerations

- Inadvertent IV injection of usual IM formulation and dose constitutes a 10-fold overdose that can result in sudden severe hypertension and possible cerebral hemorrhage.